



For Bachelor Courses

Electronics, Biomaterials Science, Mechanical Engineering, Mechatronic  
Systems Engineering, Industrial Engineering, 12 CP  
Science Communication and Bionics, 6 CP

## **- Workshop 1 Final Thesis**

**6 CP**

## **- Workshop 2 Scientific Methods**

**6 CP**

**Bachelor Courses of Study - online**

Prof. Dr. Marie-Louise Klotz

For Science Communication and Bionics, B.Sc.

- **Practical Science Communication  
Skill Application** **6 CP**
- **Workshop:  
Scientific Methods** **6 CP**

**Bachelor Courses of Study - online**

Prof. Dr. Marie-Louise Klotz

# Winter Semester 2018/2019

Online double Workshop - for all Bachelor courses

Examination: Testate, 12 credit points

# **Hello! Welcome to the online- double Workshop Package Final Thesis/Writing Scientific**

Please, be so kind and introduce yourself!  
Send an E-Mail to me with the information requested. I  
need them for HIS to confirm the testate.

- First name
- Family name
- Study programme
- Number of your semester
- Enrolment number

I like to guide you through the qualification of

## **Workshop Final Thesis**

## **Workshop Scientific Methods**

For each you will receive 6 CP.

The competence learned here you will need at the Rhine-Waal University, in the scientific world and to some extend during your professional life.

## First steps you have to deal with:

1. Choosing a topic, an open question you are interested to answer, to investigate or to analyse. - During the workshop I will give you your individual topic.
2. Gaining knowledge about this topic by checking the literature. What means you will manage an academic **literature research** by using the University Library, the books, e-books, databases for journals, scientific articles and conference papers.
3. Organizing the literature by an literature administration software like EndNote in a scientific manner. Only some webpages will be accepted in the literature list of your scientific articles who have to write.

# Requested competences (I)

1. Literature review, use of EndNote or another software to manage the references
2. Reading fast – an ability for understanding and time management when reading the literature, the articles, book chapters and so on.
3. Project management for the logistics of your research, your thesis – how to organize my thesis
4. Training of the development of an innovative concept or an idea, or a device ... what will be relevant for you depends on your interest for instance.

## Requested competences (II)

6. Application of your statistical knowledge for interpretation and evaluation of your datas

7. Scientific communication - by presentation of a scientific idea or results

- by writing a press release
- by writing an abstract and a summary
- by writing an introduction of a thesis (only for simulation, not your real one) with the different type of chapters



## First important targets:

- You have an idea of a topic which is interesting for you
- You have to learn more about the topic by reading, looking for articles
- You gather the information, articles, books, conferences papers , webpages, personal communication etc.. With all relevant bibliografic information including and in addition the Abstract and the full article
- Be accurate collecting the information, the knowledge! Take care about the sources and the abstract, better save the full article. In this early stage you cannot know which paper will be relevant to be cited in the final thesis or paper.
- In order to organize the information properly and in a logistic way you should use an **literature adminstration software**. In the University we have the software EndNote which you can receive by the University IT-Support in building 4 or via E-Mail request.

## **Reading fast! An important competence - you should train yourself!**

Gaining knowledge means who have to read a lot of papers, summarizing the most important aspects, always attaching the reference where you got the information.

A lot of papers – that can mean 50 or up to 100 articles and maybe more. Therefore you have to learn to read fast, to summarize contents, to pick out the interested points for your questions, out of different discussions.

Reading fast – you have to train it! ..

Because you need the time. Working out a project in the professional life very often has to be done under time pressure...

# Train your speed reading competence!

**Speed reading** is any of several techniques used to improve one's ability to **read** quickly.

**Speed reading** methods include chunking and minimizing subvocalization. The many available **speed reading** training programs include books, videos, software, and seminars.

**For instance:**

<http://www.readingsoft.com/>

[https://en.wikipedia.org/wiki/Speed\\_reading](https://en.wikipedia.org/wiki/Speed_reading)

<http://www.wikihow.com/Read-Faster>

Or other tools.....

....but you should become more efficient.....

## Literature Research

- Gaining knowledge about a topic,
- Checking, what is the state of the art knowledge of other experts, scientists or industry,

**This is called a literature research or literature survey!**

You have to make sure that you know everything about the topic before you start. How to learn more? You look for articles published by other scientists and expert in scientific books, journals, proceedings and so on!

**You have to become an expert as well!**

## Literature Research – why? What is the next step?

After gaining knowledge you should be able to realize where, in which field are open questions.

What around the scientific topic is not yet answered by the experts and scientists?

Where is an open question concerning the topic, the field where you are interested in? For instance, the topic of your thesis or of your research should be a new one. The thesis should deal with a open question where no knowledge is available, which is not yet investigated by scientists, where no explanations are available....etc..

Based on the literature research and review (part of the chapter **Introduction** of your thesis) you have to work out an open question, the so called **Problem**, and to answer the question will be the **Objective** of your thesis or your research.

# Literature Research and the Library of Rhine-Waal University

**You have to use the library of the Rhine-Waal University to organize an academic literature research!!!**

Please, check and study the presentation 'how to use the library, online research'.

You will find the presentation here in moodle at position 1!

I will not except more than three open source or webbased articles!

Do not forget to give the page interval where you found the information!

# Literature Research and the Library

The University offers a broad range of scientific literature. For online use you will find e-books and articles in e-journals. The presentation of Ms Mülders will guide you how to work with the library's offer.

In the scientific community communication is not possible, not excepted without a broad literature review to make sure that you are excellently informed on the state of knowledge level. As well you have to know, to discuss and to compare what other research teams worldwide are investigating related to the topic you are interested in.

# Literature as platform for knowledge gaining

As a member of the University Library you can use

Google Scholar - always as starting point!

- books, e-books, e-journals
- data bases
- articles in scientific journals
- , Web of Science
- interesting websites for your topic, companies etc.
- presentations, talks
- university websites
- .....



# Train yourself to use and work with EndNote

the software to manage the references

- go to IT Support Hochschule Rhein-Waal!  
start using it during your literature review

give ten reference organized in EndNote

You can use another software as well, if you like!

## Literature concerning Scientific Methods and Writing

The Craft of Scientific Writing

Michael Alley, Springer, 3rd  
Edition 1996

The Scientific Writers' Handbook

Th. Hayden, M. Nijhuis  
Da Capo Press 2013

Writing Your Thesis

P. Oliver, 2nd Edition, SAGE  
Publications Ltd. 2008

On Writing Well

William Zinsser 30th Edition 2006

Giving Presentations

Harvard Business School  
Publishing Corp. 2007

The Craft of Scientific Presentations

M. Alley, 2nd Edition, Springer

**Communicating as a scientist:**

**<http://www.nature.com/scitable/ebooks/english-communication-for-scientists-14053993/communicating-as-a-scientist-14238273>**

## Literature concerning scientific methods and writing:

Wissenschaftlich schreiben leicht gemacht

M. Kornmeier, e. Auflage, Haupt, UTB, 2012

Wissenschaftliches Englisch

G. Mautner, UVK, UTB 2011

Richtig wissenschaftlich schreiben

Helga Esselborn-Krumbiegel, Schönigh UTB, 2. Auflage 2012

Die wissenschaftliche Abschlussarbeit

L. Wagner, Süddeutscher Verlag für Hochschulen 2012

Leitfaden zur Bachelor-/Master-Arbeit

H. Brunner, D. Knitel et al. Textium Verlag 2011

## Literature concerning Project management:

What about your project management competence?



Project Management

von International Institute for Learning  
Kerzner, Harold R. Last International  
Institute for Learning,  
Wiley

or .....

Your script of the lecture you have done might be helpful as well?

## **Literature concerning the Competence of Statistics:**

**Montgomery, Douglas/Runger, George 2011**  
**Applied Statistics and Probability for Engineers**  
SI Version, 5th edition, Wiley

**Vining, Geoffrey/Kowalski, Scott 2011**  
Statistical Methods for Engineers, 3rd edition, Brooks/Cole

**Montgomery, Douglas (2005): Introduction to Statistical Quality Control,**  
5th edition, Wiley

# **Possible Opportunities to use your scientific knowledge or your competence in research, talking and writing**

- Communication
- Laboratory report
- Reports like a seminar paper, work assignment
- Student research project
- Thesis, like for Bachelor, Master, PhD
- Presentation, conference talk
- Paper, publication in scientific journal
- .....

**General Basics, like a law:**

**The author is responsible for the success –  
not the reader of the paper.**

Communication should be in a linear manner,  
starting at A to B to C and so on

This dynamic process has to be active on the  
level of the sentence, the passage the chapter,  
the whole text !

Starting your research or starting your process of a scientific project,

and last but not least of scientific writing,

you have to face some principles and rules:

**Accuracy, diligence  
ethic behaviour, legal behaviour, honesty,  
no copy of context, no plagiarism!!!!**



I hope, you will follow the rule: do not use information of other scientists without pointing this out!

**Be honest, work with respect and diligence!**  
**Keep the ethic rules.**

Today, there is software available to check plagiarism....

Think about **sustainability** when you are doing research...

# First target of the online course you have to achieve: (I)

- Learn to read faster! Train by yourself!
- Learn how to use and work with EndNote software!
- Learn how to use the library of Rhine-Waal University online!

## First target of the online course you have to achieve: (II)

- Work out a literature review (you receive your personal topic!) based on at least 20 references from scientific databases, journals, books, conference proceedings,
- webpages (here give the date, when you checked the page last time. Make sure that the link is active!!)
- Start your research by Google Scholar and then check the University offer for the requested article in a journal or a book etc.! Make use of scientific databases as well!
- Only one webpage as reference will be allowed. Webpages as scientific source are not appreciated by the scientific community!

## **First target of the online course you have to achieve: (III)**

How you have to list the references, the style of citation according to MLA – Modern Language Association -

**<http://www.bibme.org/citation-guide/mla/>**

**Title of the article, author**

**Name of the journal, volume in bold or underlined, year in brackets, page or interval of pages**

In case of an article in a book: give the name of the book author, then the author's name of the chapter (if available, the author of the chapter might be different to the editor's name of the book), publisher, year and the page number or interval

## First target of the online course you have to achieve: (IV)

- Use the literature administration software **EndNote** to organize the literature, your sources you found out to be relevant for your topic according to the citation style MLA
- Save the abstracts
- Save the articles when possible
- Highlight interesting sentences, information which you might use in the presentation or in your chapters – of course add the source of the information you use in a summarized form to the sentence by number.

## **First target of the online course you have to achieve: (V)**

- Please, work out a powerpoint presentation of 8 slides.  
Choose a type size of 24, for instance Arial 24

**Each figure has to have a description below the figure (a table above the table) and the addition of the source, best by a number, which you mention as well in your references list in the requested citation in a chronological manner.**

## First target of the online course you have to achieve: (VI)

- 1 Slide : Title of your presentation according to your personal topic, add your name, your study programme, your faculty name and the University name, no matriculation number!
2. Slide: List of content
3. Slide: Introduction into the topic
4. Slide: Core Message (this term only acts as a **space holder** for your term, relevant to your topic!)
5. Slide: Summary and Outlook
6. Slide: List of References
7. Slide: Acknowledgement
8. Slide: Thank you for your attention
  - add as well once more again your name and E-Mail at the end of this slide to give the chance to other experts to contact you after the talk

In case of questions, do not hesitate to contact me!

A lot of success!